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AN INTRODUCTORY ADDRESS.

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Reprinted from the EDINBURGH MEDICAL JOURNAL, *November* 1909.

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An Introductory Address.

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Gentlemen,—The custom of our University, in accordance with which each newly-appointed Professor is expected to deliver an introductory lecture, is not likely to be objected to by the individual himself, for it possesses the obvious advantage of allowing him to present to his first audience something other than a purely scientific or technical exposition of his own special subject. The custom allows him unlimited choice, but he is perhaps well advised if he selects a topic, the consideration of which may possibly provide useful suggestions for the future work of his own department.

You will admit, I think, that I stand to-day in a grave and anxious position. I am placed, as it were, at the end of a road, hewn out of circumstances by my illustrious predecessors, and emblazoned by the records of their achievements, and I have to attempt, with your assistance, to carry that road onward into an unknown future, in which both you and I will be held responsible for the work we have done.

An onerous task is before us—one which cannot be accomplished by haphazard work, one which requires concentration of energy toward a definite object.

We have to decide what that object shall be. Before making the choice we cannot do better than examine the records of the past, for although Bolingbroke's assertion that "history is philosophy, teaching by examples" may be open to dispute, nevertheless the results of past actions considered in association with the time and circumstances of the occurrence of the actions frequently point the way through the present into the future. Nor is it surprising that they should, for, if the reason for the actions was sound, it was based upon principles accepted by human nature, and human nature, like the human form, changes but little from age to age, though the nature may express itself in different words and phrases, as the form dresses itself in different clothes, whilst the years pass away.

We have, therefore, to seek for the principles accepted by our predecessors; to note the plans they adopted under the guidance

[1] Delivered in the M'Ewan Hall, Edinburgh, October 1, 1909.

of the principles they accepted, we have to question the soundness of the principles and the utility of the actions. We have to decide if we will accept the same principles and if we will attempt to carry on the road on the lines laid down in the past, or if we will strike out into a new path with the hope of thereby more quickly and surely attaining the object of our aim.

I do not wish to weary you with a detailed account either of the history of Anatomy or the history of the Chair of Anatomy in Edinburgh, but I do desire to draw your attention to some of the broader features of that history, and to ask you to note certain periods and some of the events which occurred therein.

The history of the Chair of Anatomy in the University of Edinburgh commenced in 1705, when Robert Eliot was appointed Professor of Anatomy by the Town Council. Eliot lectured in the Surgeons' Lecture Theatre, which had been completed in 1697.

After he had held the office for a few years, Adam Drummond was associated with him as co-Professor, and when Eliot died John M'Gill was associated with Drummond in a similar capacity.

In 1720 both Drummond and M'Gill resigned to make place for Alexander Monro, primus, and from that time the fame of the school advanced rapidly.

For the first few years after his appointment Monro, primus, also lectured in the Surgeons' Theatre, but in consequence of trouble which arose in association with the supply of subjects he moved for safety into the University.

Anatomy had already attained a high stage of development when Monro, primus, became Professor. The earliest anatomists, Empedocles, Anaxagoras, Hippocrates, and Galen, carried out their observations mainly, if not entirely, upon animals. After Galen's death in the latter part of the third or the early part of the fourth century, anatomical research tarried, and it was not revived or extended till the Middle Ages were passed. In the period before the revival the anatomical descriptions upon which medieal men depended were those furnished by Galen's accounts of monkeys or lower forms, or descriptions of the pig, which was considered to be an animal not dissimilar to man.

In the fifteenth and sixteenth centuries Berenger of Carpi, Mundius, Leonardo da Vinci, Vesalius, Eustachius, Fallopius, Arantius, Varolius, and many other pioneers of anatomy whose names are still associated with various parts of the human body gave great impetus to the study and teaching of Anatomy.

Vesalius is called the father of human anatomy, not because

he was the first to dissect human bodies, for in that he had been preceded, but because, by his numerous dissections and description, he was the first to place human anatomy on a satisfactory basis.

During the seventeenth and the early part of the eighteenth century the progress of anatomy was still further accelerated.

Willis greatly simplified and extended the knowledge of the nervous system, and particularly that of the brain.

Caspar Bartolin, secundus, Wharton, and Needham extended the knowledge of glands and their ducts.

Swammerdam and Ruysch improved the methods of injection Sylvius had previously used, and by their means demonstrated small vessels unknown before.

Harvey discovered and proved the circulation of the blood.

A considerable amount of knowledge regarding the lymphatic system had already been gained.

The invention of the microscope, though the instrument then existed in only a very rudimentary form, had enabled Malpighi and Leeuwenhoek to investigate and describe some of the more obvious characteristics of the tissues, and by the use of an improved instrument Leeuwenhoek had discovered the blood corpuscles in the blood and spermatozoa in seminal fluids.

In the meantime, Regnier de Graaf had described follicles in the ovary, which are still known by his name, "Graafian follicles," but he had failed to differentiate the ova from the other contents of the follicles.

In the time of Monro, primus, anatomists were divided into two great groups—"ovoists" and "animalculists"—both of whom believed that all parts of the adult body existed in miniature in the germ. Both groups, therefore, were "preformationists." They differed from each other in that the ovoists believed that all the preformed parts were in the ovum, where they lay quiescent awaiting the advent of a spermatozoon to stimulate them into activity, and the animalculists believed the preformed parts to be in the spermatozoon, the ovum being merely a pabulum necessary for growth and development.

Monro, primus, was well acquainted with the knowledge of Anatomy and allied subjects as it existed in his day.

He was an investigator, an observer, an excellent teacher, and a great organiser. He wrote upon osteology, the nerves, the nutrition of the fœtus, and upon various points of comparative anatomy. His teaching appears to have been as sound and broad as his knowledge.

He was the father of the medical school, which was initiated and which grew and prospered under his judicious guidance.

He was a far-seeing man, who possessed the power of persuading other people to accept his views, and to work with him for the accomplishment of his ideas. He lived and worked in the days of Cheselden, Winslow, François Petit, Albrecht von Haller, the father of Physiology, Lieberkuhn, and Camper, and he was a distinguished man in such distinguished company.

When he retired in 1758 he was succeeded by his son, Alexander Monro, secundus.

Monro, secundus, like his father, was trained, during his early years, under the most distinguished teachers of his time.

He was contemporary with William and John Hunter, Caspar Friedrich Wolff, J. F. Meckel, Tenon, Bichat, Cloquet, and Vieg. d'Ayzr.

He lived in a time of great men, and held place amongst the highest. He was an anatomist in the widest sense of the word, and by his work and his writings he helped his contemporaries to still further extend the boundaries of anatomical knowledge.

He wrote upon seminal fluids, the brain, and the sense organs, and he compared the anatomy and physiology of fishes with the anatomy and physiology of man.

He was a greater scientist, he appears to have been a more brilliant teacher than his father, and he increased the already great reputation of the school.

In 1798 he was succeeded by his son, Alexander Monro, tertius, a man who was well and widely educated, who possessed the scientific type of mind, and who established the nucleus of the Anthropological Section of the University Anatomical Museum. He was particularly interested in Pathology, and his writings upon that subject are said to have been of considerable importance; but he seems to have been unable to arouse any enthusiasm for the study and teaching of Anatomy, and his publications dealing with pelvic anatomy and the anatomy of the brain do not rank so high as the writings of his father.

It was during his tenure of the Chair that the science of Embryology was placed upon a firm basis. Its fringe had been touched by Aristotle and Galen, and it had been placed on a better footing by the researches of Fabricius at Aquapendente and Swammerdam, but it was raised to a definite and satisfactory position by the work of Pander, von Baer, Coste, Martin, Barry, Wharton Jones, Rathke, and Allen Thomson.

In 1827 von Baer discovered the human ovum, distinguishing it from the other contents, Graafian follicle, with which it had previously been confused, and he laid the foundation of the knowledge of germinal layers, which afterwards played so important a part in the discussions of anatomists and pathologists. Allen Thomson described the formation of the aorta from two primitive tubes in 1830, and the observations of embryologists were tending, on the one hand, to discredit the theory of preformation, which had so long held sway, and, on the other, to support the theory of epigenesis, propounded by Wolff in 1759, in which he asserted that the parts of the adult were not preformed in the germ, but were developed from a structureless blastema, as development and growth proceeded after they had been initiated by the contact of the seminal fluid with the ovum.

It was also during the period Monro, tertius, occupied the Chair of Anatomy, in 1839, that Schleiden and Schwann proved cells to be the units of structure of vegetable and animal tissues, and so laid the foundation of the great offshoot of Anatomy known as Cytology, which has become so important during later years. At the same time Charles Bell was prosecuting the work which led to the discovery of the functions of the roots of the spinal nerves, and to the explanation of many of the functions of the nervous system which had not been previously understood.

In 1846 Monro, tertius, was succeeded by John Goodsir, a man of very different calibre. Goodsir was a great anatomist, a philosopher, and an excellent teacher. His knowledge of Anatomy, Physiology, Pathology, and Embryology was profound. He was a careful and capable investigator, who ever sought for the truth, and he expressed his opinions and recorded his observations in clear and definite words. His writings show that he was thoroughly acquainted with the work of his predecessors and contemporaries, and he was able to expound to his students the soundest principles of his subject and the most recent theories regarding the questions under discussion in his day. He wrote upon the vertebrate skull, the development of the teeth, cellular pathology, the placenta, the movement of joints, and many other subjects of anatomical importance.

During the period Goodsir occupied the Chair, Anatomy, Embryology, and Comparative Anatomy were making enormous progress, aided by the work of Jones and Richard Quain, Allen Thomson, Burns, Harrison, Todd, Bischoff, Rathke, Arnold, Reichert, Meyer, and Richard Owen.

In 1867 John Goodsir was succeeded by his chief demonstrator, William Turner.

With Turner's work as a teacher, anatomist, and organiser you are all familiar, or will rapidly become familiar. His writings upon the skeleton, the placenta, the pelvis, the cranium, the cetacea, and other subjects of anatomical and anthropological importance are classical. The buildings and arrangements he has initiated, created or helped to create, surround us; we shall proceed in our onward course aided by the advantages which are due to his foresight, energy, and determination. His influence as a teacher of Anatomy may be gauged to some extent by the fact that his pupils hold, or have held, the Chairs of Anatomy in Edinburgh, Glasgow, St. Andrews, Newcastle, Manchester, Liverpool, Cardiff, Oxford, King's College, London, Dublin, Belfast, Melbourne, Sydney, Montreal, and Toronto. I know no other such record.

During his tenure of the Chair the new buildings were erected, the present magnificent dissecting-room and museum were built, and the value of the museum was enormously increased by the specimens he secured and arranged.

When he resigned the Chair in 1903 to take up the more important duties of Principal, Daniel John Cunningham was appointed to succeed him. Unfortunately, Cunningham was destined to hold the Chair for only a very short period, and his untimely death has taken from the University the one man who was best fitted to occupy the Chair of Anatomy after his teacher. Most of us have known him as teacher or colleague, and to everyone who knew him he was a friend. Everyone who came into contact with him fell under his kind and stimulating influence. He was slow to blame, though strong to correct when correction was necessary; quick to sympathise and help, he encouraged everyone to his highest level, and got the best from each and all. He was conversant with all parts of his own and allied subjects, he was an indefatigable worker, a lucid writer, and a stimulating and impressive teacher. He published works upon varied subjects: the spinal column, the muscles of the hands and feet, the brain, and the stomach rank amongst the highest, and his text-book and manual are in use in all English-speaking countries. In addition, he was a magnificent organiser. His death has deprived the University of one of its most distinguished men, and it has deprived anatomists of a leader who was admired, respected, and loved by all who came into contact with him.

In the past 200 years all branches of Anatomy have made more progress than in any previous time. Improved methods and improved instruments have enabled an army of observers and experimenters to obtain results never dreamed of in earlier days, and the occupants of the Chair of Anatomy have ever kept themselves in touch with the more important parts of the rapidly growing subjects, and have transmitted to their students a knowledge of all the important facts.

There is little doubt that if the anatomists of the latter part of the eighteenth and the early part of the nineteenth centuries could return to-day, they would be amazed by the amount of knowledge which has been accumulated since their time, just as our great-great-grandfathers would probably be amazed and appalled if they were suddenly placed to-day in the midst of a large commercial city amongst rattling electric cars and tooting motors, whilst we who grow up amidst widening knowledge and its utilisation absorb the knowledge as we grow as easily as our ancestors acquired the more limited knowledge of their day.

In Sir Alexander Grant's *History of the University* it is stated that Dr. John Barclay, who taught in the Extra-Mural School during the time of the third Monro, and who was a distinguished anatomist, an incisive critic, and a brilliant exponent of his subject, classified anatomists up to his time in three groups First, the reapers who entered into a full harvest and gathered in the sheaves. They were the pioneers. Second, the gleaners of later days who secured a few heads of corn left by the reapers; and third, the geese of his own day, who might hope to obtain by diligent search a few grains of corn amongst the stubble. Could John Barclay return to-day, he would, no doubt, in his critical and uncompromising manner, confirm the classification of himself and others who have expressed similar short-sighted opinions, but for reasons very different from those which misled him in the early part of the nineteenth century.

If it were necessary to prove that human anatomy, even as regards its merely descriptive portions, is not the fixed science many unobservant people are inclined to believe it to be, I might point to the fact that even to so comparatively a recent period as ten years ago it was the custom to depict the human heart very much in the form made so popular by the old-fashioned valentine. Yet such representations, which induce their observers to believe that the blood flows into the heart from above, runs downwards

from the auricles to the ventricles, and is ejected upwards into the arteries, are far from correct, so far at least as the human heart is concerned, and the long persistence of such figures is due, not to the fixity of anatomy, but to the absence of proper fixation of the subjects from which the specimens used for illustration were obtained. The figures possibly represent, more or less correctly, the conditions met with in quadrupeds, but with the assumption by man of the erect posture the human heart has changed its form and position. It is not a simple but an irregular cone, into the back part of which blood flows both from above and below, then runs forwards, not downwards, from the auricles to the ventricles, before it is ejected upwards and backwards into the arteries. Whilst a knowledge of the true form of the heart has only been gained in comparatively recent times, a proper conception of the shape and size of the stomach is a still more recent acquisition, and has been provided by the observations of Cunningham and Waterston. The pear-shaped, evenly-curved, and complacently rounded organ represented in many illustrations, if it belongs to us at all, only comes into our possession after death, whilst the actual shape of the organ we carry with us for daily use varies from time to time with the amount of food it contains, the stage of digestion, and the condition of the surrounding organs. You will find, in the bone-room, casts which illustrate, in a most accurate manner, various different shapes the organ may assume. If our conception of two well-known organs has been materially changed in recent times by the use of improved methods, who shall say that still improving methods will not further advance our knowledge in the near future.

Systematic Anatomy is still moving forward, and in the case of Comparative Anatomy a mere enumeration of the names of the investigators who have added to our knowledge of the subject in the period under consideration would occupy more time than is at my disposal. Originating in the earliest days of Anatomy as a definite department, it was first placed on a satisfactory footing by Cuvier, in the latter part of the eighteenth and the early part of the nineteenth century. Its position was strengthened by the work of J. F. Meckel, Johannes Müller, Siebold, Stannius Owen, and Milne-Edwards, and it has been further extended in more recent times by Gegenbaur, Dohrn, Huxley, Turner, Wiedersheim, Cope, D. J. Cunningham, Parker, Agassiz, Ray Lankester, Osborne, and numerous other distinguished men. The consideration of the more philosophic side of the subject originated by Oken and

Goethe was greatly expanded by Lamarck, whose publication of his *Philosophie Zoologique* in 1809 initiated the theory of descent, which has since been carried to wider and surer ground by Huxley and Darwin.

The growth of Histology and Cytology has not been less vigorous than that of Systematic and Comparative Anatomy. The details of the anatomy of cells, known to Schwann, Remak, and Goodsir, now constitute the gross anatomy of those bodies.

In 1840 Schwann recognised three parts in a typical cell: a vesicular cell body; a vesicular nucleus enclosed in the cell body, and enclosing a vesicular nucleolus. He believed that cells were deposited in a structureless or slightly granular blastema, somewhat in the same way as crystals—first the nucleolus, then the nucleus, and last the cell body.

The falsity of his opinions regarding the origin of cells was discovered in 1851, when Remak proved that cells rose from pre-existing cells, a fact succinctly summarised by Virchow's famous aphorism, "Omnis cellula e cellulâ"—an aphorism which tells part but not the whole of the truth, for about two years after Remak's discovery Kölliker and Richert showed that the spermatozoon was also a cell, and that the union of ovum and spermatozoon was necessary for the initiation of a new individual of the higher forms; whence follows the possibility that every cell of an animal body may contain parts, not of one, but of two, originally separate cells.

We still say that every animal is developed from one cell, the fertilised ovum—a term which is retained partly from custom and partly for convenience, though it fails to clearly express the fact that the fertilised ovum is really a compound of two cells.

The importance of the conception of the fertilised ovum as a compound organism began to be increasingly apparent in 1873, when Anton Schneider drew attention to the remarkable changes which take place in the cell nucleus previous to the division of the cell into two parts. Since 1873 the researches of Flemming, Fol. Ed. van Beneden, Butschli, Boveri, Oscar Hertwig and many other observers have shown that Schwann and Remak had a very incomplete idea of the constitution of a typical cell. Fresh methods of fixation and staining in the hands of skilful workers have shown that each cell consists of a substance called protoplasm—Huxley's "physical basis of life;" that the protoplasm itself possesses a complicate structure, and that there is embedded in the cell substance not only the nucleus but also a body called a centrosome,

which appears to function as a presiding genius when cell division is about to take place.

It has also been shown that the nucleus is not a vesicle, but that it consists of protoplasm which possesses a very definite structure, and which is easily separated into two parts—one stainable, the chromatin; and the other unstainable, the achromatin. The researches of the investigators previously mentioned, and others too numerous to mention now, have gradually produced the conviction that the chromatic substance of the nucleus is the repository of the inherited capabilities of the cell. There is also strong reason for believing that when the spermatozoon and ovum unite, the chromatic character bearing particles of the two do not blend, but are merely associated together, from which follows the possibility that the cells derived from the fertilised ovum may contain particles of the chromatic substance of one or the other or both parents. Here is a most interesting anatomical question which still awaits a definite solution.

Beyond the general details of cell structure to which I have referred, our knowledge of special features of the anatomy of certain groups of cells, and particularly the anatomy of the cells of the nervous system, has been revolutionised during recent years by the skilful experiments and observations of Golgi, Weigert, Bethe, Nissl, Raymon y Cajal, Retzius, Heidenhein, Apathy, and other investigators.

The advance of Embryology has been no less marked than that of other departments of Anatomy. Year by year the knowledge of the general and special features of the development of particular animals and groups of animals, including man, has been widened and made more exact by the work of Balfour, Dohrn, Kölliker, Beard, Selenka, Strahl, Bonnet, His, Hubrecht, Zeigler, Waldeyer, Bryce, and a growing army of other investigators. In the domain of experimental embryology the researches and experiments of Dreisch, Wilson, O. Hertwig, Loeb, and others have furnished remarkable results demonstrating the important fact that whilst the fertilised ovum contains inherited capabilities derived in the more or less distant past from innumerable ancestors, it can itself exercise but few of these capabilities. It can only divide into a number of cells, some of which, the germ cells, retain capabilities similar to those of their parents, whilst others become servants of the germ cells, and form, by repeated division, the bodies of the individuals in which germ cells are lodged, and by means of which they are placed in conditions favourable for the performance of their functions.

Nature is generous with, and very careful of, her germ cells; she places them in affluent circumstances as an aristocracy of descent—a kind of House of Lords, for which and from which she provides excellent servants, who can reproduce themselves by division, but who cannot, like the germ cells, enter into union with other cells of similar nature to produce new individuals possessing, possibly, improved capabilities.

Nature as revealed by Anatomy shows plainly that she has no belief in any general equality. She produces her children in myriads, casts them into the sea of circumstances, approves and helps only those who can swim, and rewards them according to their performances.

Had time permitted I would have liked to glance at the experiments and observations of Roux and Weismann, which tended to swing the pendulum of thought back from the epigenesis theory of Wolff toward, but not to, the preformation theory of Leeuwenhoek and Haller, for both Roux's mosaic theory and Weismann's elaborate conception of chromosomes and their subdivisions involve the belief not that every part of the adult body exists preformed in the germ, but that every inheritable quality of the body has its own representation in the germ substance. And it would have been interesting to examine, even in only a superficial manner, the later experiments of Dreisch and Loeb, and those of some of the followers of Mendel which appear to be swinging the pendulum again, and this time towards the intermediate opinion that the constitution of the germ is sufficiently complex to account for the limitation of the potentialities of some of the cells eventually derived from it, and yet sufficiently simple "to allow of the divisibility of the whole into totipotent parts." The riddle of life is not yet solved—

> "A hair, perhaps, divides the false and true,
> Yes, and a single alif were the clue—
> Could you but find it—to the treasure house
> And peradventure to the master too."

No one has yet touched the hair, no one has found the alif, but numbers have sought and will seek, and in the search some will find in the future, as some have found in the past, knowledge useful to mankind.

I have placed before you the merest outline of the history of Anatomy during the period of the existence of the Chair of Anatomy in Edinburgh, and a similarly faint outline of the history of occupants of the Chair. Counting from the appointment of

Alexander Monro, primus, the Chair is not 200 years old, yet it and the school with which it is associated are amongst the most famous in the world.

Its students who have become graduates are scattered north, south, east, and west to the farthest corners of the habitable world, and wherever they are situated they gain respect and admiration, and prove themselves equal to all circumstances.

Their success is obvious, and the secret of it is not far to seek. You will have noted, even from the short and incomplete survey I have been able to place before you, the nature of the men who have occupied the Chair in the past—they have been of the type which carved out Britain's fortunes in the days of Elizabeth; men who, looking at a seed, could see gardens of flowers, or looking at a grain of gold could behold ridges and mountains of golden quartz, and the fleets and armies of commerce. They were men also who could persuade others to help them to realise their visions. Their knowledge was at the same time precise and broad, their views were broad, their forcsight great, and there is evidence to show that their teaching was adapted to inculcate broad principles and accurate knowledge.

They appear to have taught with the conviction that it was essential that every medical graduate should have a precise and accurate knowledge of the human body, as a living object with which he would have to deal under varying circumstances, and with the added conviction that every properly educated medical man should have a sound grasp of the principles of Anatomy and its relation to allied subjects. Their views of a proper education have permeated the School, with the result that its graduates are not merely technical experts able to deal effectively with things they have seen and done before, but men endowed with a knowledge of the broad general principles on which Anatomy and the allied sciences rest, as well as with a knowledge of concrete examples, and consequently men capable of dealing effectively with circumstances as they arise, whether those circumstances are familiar or not.

The occupiers of the Chair of Anatomy have always avoided the disastrous plan of sacrificing the exception to the rule; they have taught on lines which have given encouragement, scope, and inspiration to all, and the results have proved the wisdom of their principles and methods.

Our quest, therefore, is gained. The previous occupants of the Chair of Anatomy worked with the belief that in a proper education a sound knowledge of general principles was required,

and that a detailed knowledge of particular examples was essential for special purposes.

If we accept their views of the importance of general and detailed knowledge, and adapt our plans to the circumstances of to-day, we shall have reason to hope that we shall be able to carry on our predecessors' work, and obtain, as they did, successful results.

Before concluding, let me say a few more words directed to those who are to become but are not yet graduates of Medicine, and more particularly to those who are in the early stages of undergraduateship. I have sketched for you the broad outlines of the progress of Anatomy to show you that the subject is living and vigorous. Now let me say that whilst it is important for your own welfare and position that you should have a wide knowledge of broad general principles upon which Anatomy and the allied sciences rest, so that you may be able to hold place with other well-educated people, it is your *duty* to acquire a precise and accurate knowledge of the human body, the organism with which you are to deal in your daily lives. On that knowledge will some day depend happiness or disaster; life or death. You must train your eyes and hands to know each and every part, so that when the critical moment comes you will not have to think —you will be able to do.

As Medicine and Surgery advance, the knowledge of human anatomy becomes more and more important. Thirty years ago it was sufficient for practical purposes if the physician or surgeon had a good general knowledge of the forms and positions of the abdominal and thoracic viscera. Now that both cavities can be opened not only with impunity, but with the most successful curative results, it is essential that you should know every organ intimately both by sight and touch. Moreover, it is necessary, in some instances, that you should know not only the normal position of an organ, but the other positions it may occupy as a result of incomplete development.

A few years ago the smaller details of the arterial and lymphatic arrangements of the abdominal part of the alimentary canal were of little practical importance for the canal was almost inaccessible for operative purposes. To-day it is frequently operated upon, and unless you know the details of the arteries and lymphatics you may apply a ligature which may cause the death of your patient, or you may leave an infected gland which might have been removed, and so fail to save a life that was in your hands.

In the years when conservative surgery was less practised than now, so far as the limbs were concerned, it sufficed to know the positions of the main arteries and nerves and the general arrangement of the tendons and muscles. It is not so to-day. How little it is so can perhaps be illustrated best by an account of a case brought to my notice a short time ago by a distinguished surgeon in a large town, who was once a prosector here and afterwards my colleague as demonstrator of Anatomy in Manchester.

The manager of an estate in the East had the misfortune to fall on a large knife, which cut through all the structures in the front of the lower part of his forearm to the bone. The local practitioner only ventured to tie the arteries, then he sent his patient down to the coast. The wound sloughed, and the medical men at the coast sent the patient home. When he arrived the wound had healed, and in its place was a mass of scar tissue, in which the nerves and shrunken tendons were embedded; the hand was useless, incapable of movement, and on its palmar aspect devoid of sensation. Not many years ago such a useless hand would have been amputated. It was decided to try and save it. The scar was opened up, the ends of the tendons and nerves dissected out, but it was found they had shrunk so much that they could not properly be brought together, therefore portions of the bones were cut out to shorten the limb. The bones, tendons, and nerves were united respectively end to end; healing took place, and now sensation and movement are returning, and there is every probability that the patient will regain the full use of his hand. Such an operation could not have been performed without the possession of a most accurate knowledge of Anatomy. I might continue indefinitely with examples emphasising the growing importance of human anatomy, but will mention to you only one more, which illustrates the neeessity of a knowledge of abnormalities or variations. Some day one or other of you will have a patient who will complain of pain along the inner side of the arm, forearm, and hand, or one or other of those areas, and possibly of growing weakness of the muscles of the thumb and little finger. You will probably think of many causes for the symptoms, but if you know your Anatomy properly you will think, amongst others, of the possibility of an additional rib at the root of the neck pressing on the nerves passing to the arm.

Those of you, then, who intend to become competent medical men must know your human anatomy thoroughly, and you must also understand the general principles upon which the structure and functions and development of the body are based.